

## PATENT COOPERATION TREATY

PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 05 MAY 2006

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Applicant's or agent's file reference 2529-10298	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. PCT/EP2005/001367	International filing date (day/month/year) 11.02.2005	Priority date (day/month/year) 19.02.2004
International Patent Classification (IPC) or national classification and IPC INV. C08F8/00		
Applicant WALTECH AG et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand  19.12.2005	Date of completion of this report  04.05.2006	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Boletti, C  Telephone No. +49 89 2399-8527	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2005/001367

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
  - ☐ international search (under Rules 12.3(a) and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4(a))
  - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements**\* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-17 as originally filed

**Claims, Numbers**

4-20 as originally filed

1-3, 21-24 received on 19.12.2005 with letter of 19.12.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2005/001367

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-20
	No: Claims	21-24
Inventive step (IS)	Yes: Claims	1-20
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/EP2005/001367

None of the prior art documents cited in the international search report discloses nor suggests the process representing the subject-matter of claims 1 to 20.

Independent to the process of obtainment, the high molecular mass acrylic polymer of claims 21 to 24 is already known from (D2) EP 0541201 (see p. 4, l. 40 to p. 5, l. 12) and (D3) JP 63230704 (see abstract).

Therefore, the subject-matter of claims 21-24 is not novel under art. 33(2) PCT.

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Patent claims:

1. Method of forming high-molecular polymers starting from gel-forming water-insoluble polymers, ~~in particular polymers of the acrylic type,~~ including the steps of:
    - a) dissolving an amount of at least one initiator-modifier compound of the general formula  $\text{EHaO}$ ,  $\text{EHaO}_2$ ,  $\text{EHaO}_3$  or  $\text{EHaO}_4$  wherein  
E is hydrogen or an alkali metal or alkali earth metal and  
Ha is halogenin an aqueous solution at a starting temperature;
    - b) adding a gel-forming water insoluble polymer to the solution and mixing it therewith to form macro-aggregates from the polymers; and finally
    - c) modifying the macroaggregates by heating or by irradiation to form water-soluble high-molecular polymers.
  2. Method of claim 1, wherein for the modification of the macro-aggregates the temperature of the solution is increased steadily or in intervals from the starting temperature to an elevated aging temperature for a pre-determined time period,
  3. Method of claim 1 or 2, further comprising the step of adding a reducing agent to the solution for the removal of excess initiator-modifier compound.
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2. Method according to any of claims 1 to 3, ~~wherein the initiator-modifier compound is of the general formula  $\text{EHaO}$ ,  $\text{EHaO}_2$ ,  $\text{EHaO}_3$  or  $\text{EHaO}_4$  wherein~~  
~~E~~ is hydrogen or an alkali metal or alkali earth metal and  
~~Ha~~ is halogen.

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preferably between 5 and 10% per weight.

~~17. Method according to one of the claims 1 to 1716, wherein the pH of the reaction solution is kept between 5 and 14 and preferably between 7 and 12.~~

~~18. Method according to one of the claims 1 to 1817, wherein the resulting reaction is aged at an aging temperature of 20 to 50 °C for at least 1 hour, preferably for at least 3 hours, and most preferably for at least 10 hours.~~

~~19. Method according to one of the claims 1 to 1918, wherein the reaction mixture is irradiated by electromagnetic radiation, preferably daylight, UV-light, penetrating ( $\gamma$ ) and/or X-ray radiation.~~

~~20. Method according to one of the claims 1 to 2019, wherein the reaction mixture is agitated or stirred vigorously during and after the addition of the gel-forming water insoluble polymer.~~

~~21. High molecular mass acrylic polymer obtainable according to one of the claims 1 to 21 by the steps of:~~

~~a) dissolving an amount of at least one initiator-modifier compound of the general formula  $\text{EHaO}$ ,  $\text{EHaO}_2$ ,  $\text{EHaO}_3$  or  $\text{EHaO}_4$  wherein~~

~~E is hydrogen or an alkali metal or alkali earth metal and~~

~~Ha is halogen~~

~~in an aqueous solution at a starting temperature;~~

~~b) adding a gel-forming water insoluble polymer of the acrylic type to the solution and mixing it therewith to form macro-aggregates from the~~

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polymers; and finally

c) modifying the macroaggregates by heating or by irradiation to form water-soluble high-molecular polymers.

22.Acrylic polymer according to claim 21, wherein the average molecular weight is between  $0.2 \times 10^6$  and  $15 \times 10^6$  a.u.

23.Acrylic polymer according to claim 22 or 23, wherein the polymer is water soluble.

24.Acrylic polymer according to one of the claims 21 to 23 and further including the steps of one of the claims 2 to 20.